TRANSACTIONS

OF THE

AMERICAN SOCIETY OF CIVIL ENGINEERS

INDEX

VOLUME 102

1937

SUBJECT INDEX, PAGE 1716
AUTHOR INDEX, PAGE 1725

Titles of papers are in quotation marks when given with the author's name.

VOLUME 102

SUBJECT INDEX

ACCIDENTS.

"The Modern Express Highway." Charles M. Noble. (With Discussion.) 1068.

ADDRESSES.

Presidential Address at the Annual Convention at Detroit, Michigan, July 21, 1937. Louis C. Hill. 1173.

ALLOYS.

"Structural Application of Steel and Light-Weight Alloys": A Symposium. Jonathan Jones, A. V. Karpov. R. L. Templin, J. H. A. Brahtz, E. C. Bain and F. T. Llewellyn, M. J. R. Morris, Zay Jeffries, C. F. Nagel, Jr., and R. T. Wood, James Aston, V. D. Beard, Leon S. Moisseiff, E. J. W. Ragsdale, E. C. Hartmann, and A. W Winston. (With Discussion.) 1179.

ALUMINUM.

Structural application of aluminum alloys. 1369.

AQUEDUCTS.

"Surface and Sub-Surface Investigations, Quabbin Dams and Aqueduct": A Symposium. Frank E. Winsor, Stanley M. Dore, and Frank E. Fahlquist. (With Discussion.) 679.

BEAMS.

"Reinforced Concrete Members Under Direct Tension and Bending." D. B. Gumensky. (With Discussion.) 372.

"Successive Elimination of Unknowns in the Slope Deflection Method." John B. Wilbur. (With Discussion.) 346.

"Truss Deflections: The Panel Deflection Method." Louis H. Shoemaker. (With Discussion.) 195.

BIBLIOGRAPHY.

Bibliography on behavior of stationary wire rope. 636.
Bibliography on solution of simultaneous equations by iteration. 948.
Bibliography on stable channels in erodible material. 141.

BLASTING.

Drilling and blasting at Quabbin Aqueduct. 731.

BORINGS.

Permeability determinations, Quabbin Dams. 682.

BRIDGES.

"Wind Stresses in Reinforced Concrete Arch Bridges." A. A. Eremin. 324. Discussion: Leon Blog, Fang-Yin Tsai, Paul Andersen, and Louis Blume. 334.

BUILDINGS.

"Dynamic Distortions in Structures Subjected to Sudden Earth Shock." Harry A. Williams. (With Discussion.) 838.

"Tall Building Frames Studied by Means of Mechanical Models." Francis P. Witmer and Harry H. Bonner. (With Discussion.) 416.

CANALS.

"Stable Channels in Erodible Material." E. W. Lane. (With Discussion.) 123.

CHANNELS (WATERWAYS).

"Stable Channels in Erodible Material." E. W. Lane. 123. Discussion: R. C. Johnson, E. S. Lindley, J. C. Stevens, C. R. Pettis, Harry F. Blaney, Sigurd Eliassen, R. E. Ballester, Gerald Lacey, V. V. Tchikoff, and W. M. Griffith. 143.

See also **WATER, FLOW OF, IN OPEN CHANNELS.**

COLUMNS.

"Tall Building Frames Studied by Means of Mechanical Models." Francis P. Witmer and Harry H. Bonner. (With Discussion.) 416.

CONTINUOUS BEAMS.

"Analysis of Continuous Frames by Balancing Angle Changes." L. E. Grinter. (With Discussion.) 1020.

CORROSION.

Corrosion in relation to engineering structures. 1295.

CURVES.

"The Modern Express Highway." Charles M. Noble. (With Discussion.) 1068.

DAMS.

"Surface and Sub-Surface Investigations, Quabbin Dams and Aqueduct": A Symposium. Frank E. Winsor, Stanley M. Dore, and Frank E. Fahlquist. 679. Discussion: Bayard F. Snow, Ole Singstad, and Verne Gongwer. 737.

DRILLING.

Drilling and blasting at Quabbin Aqueduct. 731.

EARTH PRESSURES.

"Lateral Pile-Loading Tests." Lawrence B. Feagin. (With Discussion.) 236.

EARTHQUAKES.

"Dynamic Distortions in Structures Subjected to Sudden Earth Shock." Harry A. Williams. (With Discussion.) 838.

ENGINEERS AND ENGINEERING.

"The Engineer, an Employee-Employer": Address at the Annual Convention, Detroit, Michigan, July 21, 1937. Louis C. Hill. 1173.

EROSION.

"Stable Channels in Erodible Material." E. W. Lane. (With Discussion.) 123.

EXCAVATION.

Geologic features, Quabbin Aqueduct. 712.

FOUNDATIONS.

"Lateral Pile-Loading Tests." Lawrence B. Feagin. 236. Discussion: A. E. Cummings, J. C. Meem, T. Kennard Thomson, August E. Niederhoff, Lazarus White, Y. L. Chang, and D. P. Krynine. 255.

GEOLOGY.

Geologic features, Quabbin Aqueduct. 712.

GROUND-WATER.

"Administrative Control of Underground Water: Physical and Legal Aspects." Harold Conkling. 753. Discussion: Joseph Jacobs, W. D. Faucette and J. E. Willoughby, R. E. Savage, H. J. F. Gourley, O. J. Baldwin, G. E. P. Smith, David G. Thompson, Wells A. Hutchins, John E. Field, George S. Knapp, Chandler Davis, and L. Standish Hall. 785.

Permeability determinations, Quabbin Dams. 682.

HIGHWAYS AND ROADS.

"The Modern Express Highway." Charles M. Noble. 1068. Discussion: Fred Lavis, Joseph Barnett, G. E. Hawthorn, John F. Fairchild, Leslie R. Schureman, C. H. Purcell, Elmer R. Haile, Jr., H. W. Giffin, T. T. Wiley, F. L. McRee, Theron M. Ripley, W. W. Crosby, Richard S. Kirby, Harold M. Lewis, George Conrad Diehl, William E. Rudolph, A. C. Dennis, J. C. Carpenter, Henry B. Alvord, Robert Eugene Hiles, Chandler Davis, and R. A. Moyer. 1079.

HYDRAULICS.

See **WATER, FLOW OF.**

MAGNESIUM.

Magnesium alloys and their structural application. 1385.

MECHANICS.

"Simultaneous Equations in Mechanics Solved by Iteration." W. L. Schwalbe. (With Discussion.) 939.

MEMOIRS OF DECEASED MEMBERS.

Aycrigg, William Anderson. 1494.
Baker, Albert Read. 1677.
Balcomb, John Capron. 1496.
Barbour, LeRoy Wright, 1679.
Barclay, Angus Francis. 1498.
Bates, Onward. 1484.
Bemis, Albert Farwell. 1707.
Beyer, Albin Hermann. 1499.
Biddle, John. 1501.
Boyden, Harry Chester. 1508.
Bradbury, Edward Gatling. 1509.
Bragonier, Arthur Taylor. 1681.
Branch, Ernest William. 1512.
Brown, Thane Ross. 1709.
Brunner, John. 1513.
Budd, Robert Dunn. 1515.
Burpee, Moses. 1516.
Butler, Leonard John. 1705.
Calder, George J. 1519.
Caton, John Hirst, 3d. 1521.
Causey, William Bowdoin. 1524.
Chassaing, Charles Willis. 1683.
Churchill, Robert Carr. 1526.
Clawiter, Edward Ivan. 1527.
Cooke, Frederick Hosmer. 1528.
Donovan, John Joseph. 1531.
Driscoll, William. 1684.
Elwell, Otto Rae. 1535.
Firth, Joseph. 1537.
Fletcher, Robert. 1538.
Frost, Harry Henry. 1686.
Gaillard, Samuel Gourdin. 1544.
Gates, Christopher Lawrence. 1546.
Gay, Martin. 1547.
Graham, George Archibald. 1550.
Green, Paul Evans. 1551.
Gregory, John Herbert. 1552.
Hammond, George Tillinghast. 1557.
Hinchman, Theodore Henry. 1559.
Hislop, John. 1563.
Hollyday, Richard Carmichael. 1564.
Hough, Laurence Cooper. 1567.
Howard, Conway Robinson. 1687.
Howe, Joseph Milton. 1569.
Hoyt, Laurence Brackett. 1573.
Jackson, Edward Sherman. 1575.
Jamieson, John Quentin. 1576.
Johntz, Albert Frederick. 1580.
Jowers, Giles Matthew. 1689.
Kell, Ralph Long. 1690.

Kelley, William Datus. 1582.
Kershaw, George Bertram de Betham. 1584.
Ketchum, Milo Smith. 1487.
Kipp, Burdett. 1585.
Kleinbeck, August Gustave. 1587.
Larsson, Carl Gustaf Emil. 1588.
Lee, Edward Hervey. 1590.
Leeper, John Bigger. 1692.
Lenth, George Casper Doering. 1592.
Lesley, Robert Whitman. 1711.
MacCalla, Clifford Sherron. 1593.
Macintyre, Robert Wentworth. 1600.
McCausland, Charles Patterson. 1602.
McKenney, Charles Albert. 1603.
McKibben, Frank Pape. 1607.
McLoughlin, Frederic Ozanam Xavier. 1609.
Mead, Elwood. 1611.
Neff, Frank Howard. 1619.
Nettleton, Edward Sherman. 1620.
Norton, James William. 1693.
Oakley, George Israel. 1623.
O'Connell, George Paul. 1694.
Odoni, Vincent Phillip. 1626.
Paret, Milnor Peck. 1628.
Parker, James Edwin. 1630.
Parmley, Walter Camp. 1632.
Pattison, Hugh. 1635.
Pearson, Roderic. 1695.
Porter, Dwight. 1639.
Post, Andrew Jackson, 2d. 1641.
Reardon, John Melvin. 1696.
Reese, Marshall Hudson. 1706.
Reeves, William Fullerton. 1644.
Ross, Douglas William. 1646.
Rush, Donald Benjamin. 1651.
Schall, Frederick Edward. 1652.
Schwartz, Clarence Horace. 1697.
Shellenberger, Leidy Rudy. 1653.
Sikes, Zenas Harrison. 1655.
Stevenson, James Cummin. 1656.
Stimson, Earl. 1657.
Strobel, Charles Louis. 1491.
Sudler, Charles Eugene. 1660.
Taylor, Edward Ralph. 1699.
Twining, William Stanton. 1662.
Ubbink, William John. 1700.
van Reenen, Reenen Jacob. 1702.
West, Ray Benedict. 1664.
Wheeler, Arthur Chambers. 1667.
Whitney, Frank Ormond. 1667.
Wilson, John Junior. 1704.

Witt, Charles Victor. 1669.
Wolff, Hans Hermann. 1670.
Yates, Bruce Clinton. 1672.
Zinn, Aaron Stanton. 1674.

MODELS.

"Comparison of Sluice-Gate Discharge in Model and Prototype." Fred William Blaisdell. (With Discussion.) 544.
"Dynamic Distortions in Structures Subjected to Sudden Earth Shock." Harry A. Williams. (With Discussion.) 838.
"Tall Building Frames Studied by Means of Mechanical Models." Francis P. Witmer and Harry H. Bonner. 416. Discussion: L. C. Maugh, L. J. Mensch, Gilbert Morrison, Fang-Yin Tsai, George E. Large and Samuel T. Carpenter, and A. W. Fischer. 434.
Tests of engineering structures and their models. 1211.

MOMENTS.

"A Direct Method of Moment Distribution." T. Y. Lin. 561. Discussion: L. E. Grinter, W. H. Huang, Felix H. Spitzer, Harold E. Wessman, Egor P. Popoff, L. T. Evans, G. S. Salter, Leon Blog, Austin H. Reeves, E. J. Bednarski, John T. Howell, I. Oesterblom, W. P. Li, and A. A. Eremin. 572.
"Analysis of Continuous Frames by Balancing Angle Changes." L. E. Grinter. (With Discussion.) 1020.

PERCOLATION.

See **SEEPAGE.**

PHOTO-ELASTICITY.

Photo-elastic determination of stress. 1227.

PUMPING.

Permeability determinations, Quabbin Dams. 682.

REINFORCED CONCRETE.

"Reinforced Concrete Members Under Direct Tension and Bending." D. B. Gumensky. 372. Discussion: A. W. Fischer, William E. Wilbur, F. C. Snow, Ralph E. Byrne, Jr., Carl H. Heilbron, Jr., F. E. Turneaure, H. E. Warrington, William A. Larsen, B. Kovediaeff, A. Floris, David B. Hall, and Odd Albert. 385.
"Wind Stresses in Reinforced Concrete Arch Bridges." A. A. Eremin. (With Discussion.) 324.

RIVERS.

"Influence of Diversion on the Mississippi and Atchafalaya Rivers." E. F. Salisbury. 75. Discussion: Leo M. Odom and E. W. Lane. 104.

SEDIMENTATION.

"Sedimentation in Quiescent and Turbulent Basins." J. J. Slade, Jr. 289. Discussion: Thomas R. Camp, Harry H. Hatch, Harry H. Moseley, and George J. Schroepfer. 306.

SEEPAGE.

"Administrative Control of Underground Water: Physical and Legal Aspects." Harold Conkling. (With Discussion.) 753.

Permeability determinations, Quabbin Dams. 682.

SILT.

"Stable Channels in Erodible Material." E. W. Lane. (With Discussion.) 123.

SLUICES.

"Comparison of Sluice-Gate Discharge in Model and Prototype." Fred William Blaisdell. (With Discussion.) 544.

SOILS.

Permeability determinations, Quabbin Dams. 682.

SPEED.

"The Modern Express Highway." Charles M. Noble. (With Discussion.) 1068.

STEEL.

Application of stainless steel in light-weight construction. 1360.

Evolution of high-strength steels used in structural engineering. 1333.

Stainless, high-alloy structural steels. 1257.

"Structural Application of Steel and Light-Weight Alloys": A Symposium. Jonathan Jones, A. V. Karpov, R. L. Templin, J. H. A. Brahtz, E. C. Bain and F. T. Llewellyn, M. J. R. Morris, Zay Jeffries, G. F. Nagel, Jr., and R. T. Wood, James Aston, V. D. Beard, Leon S. Moisseiff, E. J. W. Ragsdale, E. C. Hartmann, and A. W. Winston. 1179. Discussion: E. Mirabelli, R. W. Vose, Raymond H. Hobrock, William F. Clapp, J. C. Hunsaker, Horace C. Knerr, F. T. Sisco, J. Charles Rathbun and D. M. MacAlpine, Fred L. Plummer, C. F. Goodrich, G. K. Herzog, John H. Meursinge, P. G. Lang, Jr., W. L. Warner, Elmer K. Timby, Werner Lehman, Otis E. Hovey, R. G. Sturm, E. Robert deLuccia, O. J. Horger, A. W. Demmler, Theodore Belzner, J. P. Growdon, Karl Arnstein, A. Christianson, Robert E. Glover, Arthur C. Ruge, Alexander Klemin, Paul E. Gisiger, Russell C. Brinker, Arshag G. Solakian, H. D. Hussey, Ralph Freeman, and A. V. Karpov. 1397.

STRESS AND STRAIN.

"Behavior of Stationary Wire Ropes in Tension and Bending." Douglas M. Stewart. (With Discussion.) 606.

Modern stress theories and fatigue research. 1184.

"Reinforced Concrete Members Under Direct Tension and Bending." D. B. Gumensky. (With Discussion.) 372.

"Tall Building Frames Studied by Means of Mechanical Models." Francis P. Witmer and Harry H. Bonner. (With Discussion.) 416.

"Wind Stresses in Reinforced Concrete Arch Bridges." A. A. Eremin. (With Discussion.) 324.

STRUCTURES, THEORY OF.

"A Direct Method of Moment Distribution." T. Y. Lin. (With Discussion.) 561.

"Analysis of Continuous Frames by Balancing Angle Changes." L. E. Grinter. 1020. Discussion: John E. Goldberg, G. A. Maney, Paul Andersen, William F. Luce, Ralph E. Byrne, Jr., L. J. Mensch, Marvin A. Gray, A. Floris, Fred J. Benson, David B. Hall, and P. Craig Livesay and William M. Simpson. 1037.

"Analysis of Vierendeel Trusses." Dana Young. (With Discussion.) 869.

"Dynamic Distortions in Structures Subjected to Sudden Earth Shock." Harry A. Williams. 838. Discussion: Arthur C. Ruge, H. M. Engle, Merit P. White, and L. S. Jacobsen. 851.

"Simultaneous Equations in Mechanics Solved by Iteration." W. L. Schwalbe. 939. Discussion: Garrett B. Drummond, A. W. Fischer, M. B. Gamet, Marvin A. Gray, John E. Goldberg, and A. Floris. 957.

"Structural Application of Steel and Light-Weight Alloys": A Symposium. Jonathan Jones, A. V. Karpov, R. L. Templin, J. H. A. Brahtz, E. C. Bain and F. T. Llewellyn, M. J. R. Morris, Zay Jeffries, C. F. Nagel, Jr., and R. T. Wood, James Aston, V. D. Beard, Leon S. Moisseiff, E. J. W. Ragsdale, E. C. Hartmann, and A. W. Winston. (With Discussion.) 1179.

"Successive Elimination of Unknowns in the Slope Deflection Method." John B. Wilbur. 346. Discussion: C. A. Willson, Paul Andersen, R. W. Stewart, Adolphus Mitchell, Fang-Yin Tsai, A. Floris, A. W. Fischer, L. E. Grinter, and L. T. Wyly. 352.

"Tapered Structural Members: An Analytical Treatment." Walter H. Weiskopf and John W. Pickworth. 1. Discussion: Fred L. Plummer, LeRoy W. Clark, E. G. Paulet, J. Charles Rathbun, Halvard W. Birkeland, C. W. Dunham, Fang-Yin Tsai, A. A. Eremin, Austin H. Reeves, A. W. Fischer, and L. Legens. 23.

"Truss Deflections: The Panel Deflection Method." Louis H. Shoemaker. (With Discussion.) 195.

SURVEYING.

"Simplified Method of Determining True Bearings of a Line." Philip L. Inch. 970. Discussion: Earl F. Church, Paul E. Wylie, James B. Goodwin, C. H. Swick, Philip Kissam, George D. Whitmore, O. H. Chilton, Chalmers C. Schrontz, Frank M. Johnson, Walter H. Starkweather, C. I. Day, F. L. McRee, F. J. Duarte, Leonard C. Jordan, J. C. Pinney, R. L. Vaughn, John C. Penn, Robert H. Merrill, Crosby J. Wilkin, and C. S. Jarvis. 974.

TRUSSES.

Analysis of the Vierendeel truss. 350.

"Analysis of Vierendeel Trusses." Dana Young. 869. Discussion: L. J. Mensch, A. A. Eremin, Leon Blog, A. W. Fischer, L. C. Maugh, John E. Goldberg, Louis Baes, E. C. Ingalls and Ralph B. Peck, Harold E. Wessman, A. Floris, Kimball R. Garland, and J. D. Gedo. 897.

"Truss Deflections: The Panel Deflection Method." Louis H. Shoemaker. 195. Discussion: David B. Hall, E. Mirabelli, William Bertwell, Robert H. Hurlbutt, A. A. Eremin, T. P. Noe, Jr., David A. Molitor, Glenn L. Enke, Fang-Yin Tsai, A. W. Fischer, and L. E. Grinter. 202.

TUNNELS.

Geologic features, Quabbin Aqueduct. 712.

TURBULENCE.

"Modern Conceptions of the Mechanics of Fluid Turbulence." Hunter Rouse. (With Discussion.) 463.

"Sedimentation in Quiescent and Turbulent Basins." J. J. Slade, Jr. (With Discussion.) 289.

VIBRATION.

"Dynamic Distortions in Structures Subjected to Sudden Earth Shock." Harry A. Williams. (With Discussion.) 838.

WATER, FLOW OF, IN OPEN CHANNELS.

"Comparison of Sluice-Gate Discharge in Model and Prototype." Fred William Blaisdell. 544. Discussion: Raymond Boucher, H. E. Hurst, and G. H. Hickox. 555.

"Influence of Diversion on the Mississippi and Atchafalaya Rivers." E. F. Salisbury. (With Discussion.) 75.

"Stable Channels in Erodible Material." E. W. Lane. (With Discussion.) 123.

"Varied Flow in Open Channels of Adverse Slope." Arthur E. Matzke. 651. Discussion: H. E. von Bergen, W. E. Howland, Arno T. Lenz, J. C. Stevens, F. T. Mavis, and Hunter Rouse and Merit P. White. 661.

WATER, FLOW OF, IN PIPES.

"Modern Conceptions of the Mechanics of Fluid Turbulence." Hunter Rouse. 463. Discussion: Chesley J. Posey, S. Franz Yasines, Benjamin Miller, Ralph W. Powell, Joe W. Johnson, Warren E. Wilson, and Theodor von Kármán. 506.

WATER LAWS.

"Administrative Control of Underground Water: Physical and Legal Aspects." Harold Conkling. (With Discussion.) 753.

WATER TANKS.

Theoretical behavior of an elevated water tank. 844.

WIND BRACING.

"Successive Elimination of Unknowns in the Slope Deflection Method." John B. Wilbur. (With Discussion.) 346.

"Wind Stresses in Reinforced Concrete Arch Bridges." A. A. Eremin. (With Discussion.) 324.

WIRE ROPE.

"Behavior of Stationary Wire Ropes in Tension and Bending." Douglas M. Stewart. 606. Discussion: C. D. Meals, G. P. Boomsliter, and Ingvald E. Madsen. 638.

AUTHOR INDEX

ALBERT, ODD.

Tension and bending in concrete members. 411.

ALVORD, HENRY B.

The modern express highway. 1136.

ANDERSEN, PAUL.

Balancing angle changes. 1043.

Successive elimination of unknowns. 354.

Wind stresses in reinforced concrete arch bridges. 340.

ARNSTEIN, KARL.

Steel and light weight alloys. 1454.

ASTON, JAMES.

"Structural Application of Steel and Light-Weight Alloys: A Symposium: Corrosion in Relation to Engineering Structures." 1295.

AYCRIGG, WILLIAM ANDERSON.

Memoir of. 1494.

BAES, LOUIS.

Analysis of Vierendeel trusses. 923.

BAIN, E. C.

"Structural Application of Steel and Light-Weight Alloys: A Symposium: Low-Alloy Structural Steels." 1240.

BAKER, ALBERT READ.

Memoir of. 1677.

BALCOMB, JOHN CAPRON.

Memoir of. 1496.

BALDWIN, O. J.

Control of underground water. 793.

BALLESTER, R. E.

Stable channels in erodible material. 157.

BARBOUR, LeROY WRIGHT.

Memoir of. 1679.

BARCLAY, ANGUS FRANCIS.

Memoir of. 1498.

BARNETT, JOSEPH.

The modern express highway. 1081.

BATES, ONWARD.

Memoir of. 1484.

BEARD, V. D.

"Structural Application of Steel and Light-Weight Alloys: A Symposium: Actual Applications of Special Structural Steels." 1308.

BEDNARSKI, E. J.

Direct method of moment distribution. 592.

BELZNER, THEODORE.

Steel and light-weight alloys. 1451.

BEMIS, ALBERT FARWELL.

Memoir of. 1707.

BENSON, FRED J.

Balancing angle changes. 1059.

BERTWELL, WILLIAM.

Panel deflection method. 206.

BEYER, ALBIN HERMANN.

Memoir of. 1499.

BIDDLE, JOHN.

Memoir of. 1501.

BIRKELAND, HALVARD W.

Tapered structural members. 36.

BLAISDELL, FRED WILLIAM.

"Comparison of Sluice-Gate Discharge in Model and Prototype." 544.

BLANEY, HARRY F.

Stable channels in erodible material. 152.

BLOG, LEON.

Analysis of Vierendeel trusses. 910.

Direct method of moment distribution. 584.

Wind stresses in reinforced concrete arch bridges. 334.

BLUME, LOUIS.

Wind stresses in reinforced concrete arch bridges. 341.

BONNER, HARRY H.

"Tall Building Frames Studied by Means of Mechanical Models." 416.

BOOMSLITER, G. P.

Behavior of stationary wire ropes. 642.

BOUCHER, RAYMOND.

Sluice-gate discharge. 555.

BOYDEN, HARRY CHESTER.

Memoir of. 1508.

BRADBURY, EDWARD GATLING.

Memoir of. 1509.

BRAGONIER, ARTHUR TAYLOR.

Memoir of. 1681.

BRAHTZ, J. H. A.

"Structural Application of Steel and Light-Weight Alloys: A Symposium: Photo-Elastic Determination of Stress." 1227.

BRANCH, ERNEST WILLIAM.

Memoir of. 1512.

BRINKER, RUSSELL C.

Steel and light-weight alloys. 1461.

BROWN, THANE ROSS.

Memoir of. 1709.

BRUNNER, JOHN.

Memoir of. 1513.

BUDD, ROBERT DUNN.

Memoir of. 1515.

BURPEE, MOSES.

Memoir of. 1516.

BUTLER, LEONARD JOHN.

Memoir of. 1705.

BYRNE, RALPH E., JR.

Balancing angle changes. 1046.

Tension and bending in concrete members. 391.

CALDER, GEORGE J.
Memoir of. 1519.

CAMP, THOMAS R.
Sedimentation in quiescent and turbulent basins. 306.

CARPENTER, J. C.
The modern express highway. 1130.

CARPENTER, SAMUEL T.
Tall building frames studied by models. 452.

CATON, JOHN HIRST, 3D.
Memoir of. 1521.

CAUSEY, WILLIAM BOWDOIN.
Memoir of. 1524.

CHANG, Y. L.
Lateral pile-loading tests. 272.

CHASSAING, CHARLES WILLIS.
Memoir of. 1683.

CHILTON, O. H.
True bearings of a line. 981.

CHRISTIANSON, A.
Steel and light-weight alloys. 1455.

CHURCH, EARL F.
True bearings of a line. 974.

CHURCHILL, ROBERT CARR.
Memoir of. 1526.

CLAPP, WILLIAM F.
Steel and light-weight alloys. 1409.

CLARK, LeROY W.
Tapered structural members. 25.

CLAWITER, EDWARD IVAN.
Memoir of. 1527.

CONKLING, HAROLD.
"Administrative Control of Underground Water: Physical and Legal Aspects." 753.

COOKE, FREDERICK HOSMER.
Memoir of. 1528.

CROSBY, W. W.
The modern express highway. 1115.

CUMMINGS, A. E.
Lateral pile-loading tests. 255.

DAVIS, CHANDLER.
Control of underground water. 831.
The modern express highway. 1140.

DAY, C. I.
True bearings of a line. 992.

deLUCCIA, E. ROBERT.
Steel and light-weight alloys. 1444.

DEMMLER, A. W.
Steel and light-weight alloys. 1450.

DENNIS, A. C.
The modern express highway. 1129.

DIEHL, GEORGE CONRAD.
The modern express highway. 1124.

DONOVAN, JOHN JOSEPH.
Memoir of. 1531.

DORE, STANLEY M.
"Permeability Determinations, Quabbin Dams." 682.

DRISCOLL, WILLIAM.
Memoir of. 1684.

DRUMMOND, GARRETT B.
Solution of simultaneous equations by iteration. 957.

DUARTE, F. J.
True bearings of a line. 994.

DUNHAM, C. W.
Tapered structural members. 40.

ELIASSEN, SIGURD.
Stable channels in erodible material. 154.

ELWELL, OTTO RAE.

Memoir of. 1535.

ENGLE, H. M.

Earth shock distortions in structures. 853.

ENKE, GLENN L.

Panel deflection method. 215.

EREMIN, A. A.

Analysis of Vierendeel trusses. 908.
Direct method of moment distribution. 599.
Panel deflection method. 209.
Tapered structural members. 54.
"Wind Stresses in Reinforced Concrete Arch Bridges." 324.

EVANS, L. T.

Direct method of moment distribution. 579.

FAHLQUIST, FRANK E.

"Geologic Features, Quabbin Aqueduct." 712.

FAIRCHILD, JOHN F.

The modern express highway. 1087.

FAUCETTE, W. D.

Control of underground water. 785.

FEAGIN, LAWRENCE B.

"Lateral Pile-Loading Tests." 236.

FIELD, JOHN E.

Control of underground water. 824.

FIRTH, JOSEPH.

Memoir of. 1537.

FISCHER, A. W.

Analysis of Vierendeel trusses. 915.
Panel deflection method. 227.
Solution of simultaneous equations by iteration. 958.
Successive elimination of unknowns. 362.
Tall building frames studied by models. 457.
Tapered structural members. 56.
Tension and bending in concrete members. 385.

FLETCHER, ROBERT.

Memoir of. 1538.

FLORIS, A.

Analysis of Vierendeel trusses. 930.
Balancing angle changes. 1057.
Solution of simultaneous equations by iteration. 967.
Successive elimination of unknowns. 361.
Tension and bending in concrete members. 406.

FREEMAN, RALPH.

Steel and light-weight alloys. 1468.

FROST, HARRY HENRY.

Memoir of. 1686.

GAILLARD, SAMUEL GOURDIN.

Memoir of. 1544.

GAMET, M. B.

Solution of simultaneous equations by iteration. 961.

GARLAND, KIMBALL R.

Analysis of Vierendeel trusses. 931.

GATES, CHRISTOPHER LAWRENCE.

Memoir of. 1546.

GAY, MARTIN.

Memoir of. 1547.

GEDO, J. D.

Analysis of Vierendeel trusses. 933.

GIFFIN, H. W.

The modern express highway. 1099.

GISIGER, PAUL E.

Steel and light-weight alloys. 1459.

GLOVER, ROBERT E.

Steel and light-weight alloys. 1456.

GOLDBERG, JOHN E.

Analysis of Vierendeel trusses. 922.
Balancing angle changes. 1037.
Solution of simultaneous equations by iteration. 966.

GONGWER, VERNE.

Quabbin Dams and Aqueduct. 739.

GOODRICH, C. F.

Steel and light-weight alloys. 1418.

GOODWIN, JAMES B.

True bearings of a line. 977.

GOURLEY, H. J. F.

Control of underground water. 790.

GRAHAM, GEORGE ARCHIBALD.

Memoir of. 1550.

GRAY, MARVIN A.

Balancing angle changes. 1055.
Solution of simultaneous equations by iteration. 964.

GREEN, PAUL EVANS.

Memoir of. 1551.

GREGORY, JOHN HERBERT.

Memoir of. 1552.

GRIFFITH, W. M.

Stable channels in erodible material. 179.

GRINTER, L. E.

"Analysis of Continuous Frames by Balancing Angle Changes." 1020.
Direct method of moment distribution. 572.
Panel deflection method. 229.
Successive elimination of unknowns. 364.

GROWDON, J. P.

Steel and light-weight alloys. 1452.

GUMENSKY, D. B.

"Reinforced Concrete Members Under Direct Tension and Bending." 372.

HAILE, ELMER R., JR.

The modern express highway. 1091.

HALL, DAVID B.

Balancing angle changes. 1060.
Panel deflection method. 202.
Tension and bending in concrete members. 407.

HALL, L. STANDISH.

Control of underground water. 833.

HAMMOND, GEORGE TILLINGHAST.

Memoir of. 1557.

HARTMANN, E. C.

"Structural Application of Steel and Light-Weight Alloys: A Symposium: Structural Application of Aluminum Alloys." 1369.

HATCH, HARRY H.

Sedimentation in quiescent and turbulent basins. 314.

HAWTHORN, G. E.

The modern express highway. 1085.

HEILBRON, CARL H., JR.

Tension and bending in concrete members. 393.

HERZOG, G. K.

Steel and light-weight alloys. 1419.

HICKOX, G. H.

Sluice-gate discharge. 558.

HILES, ROBERT EUGENE.

The modern express highway. 1137.

HILL, LOUIS C.

"The Engineer, an Employee—Employer". Address at the Annual Convention, Detroit, Michigan, July 21, 1937. 1173.

HINCHMAN, THEODORE HENRY.

Memoir of. 1559.

HISLOP, JOHN.

Memoir of. 1563.

HOBROCK, RAYMOND H.

Steel and light-weight alloys. 1405.

HOLLYDAY, RICHARD CARMICHAEL.

Memoir of. 1564.

HORGER, O. J.

Steel and light-weight alloys. 1450.

HOUGH, LAURENCE COOPER.

Memoir of. 1567.

HOVEY, OTIS E.

Steel and light-weight alloys. 1440.

HOWARD, CONWAY ROBINSON.
Memoir of. 1687.

HOWE, JOSEPH MILTON.
Memoir of. 1569.

HOWELL, JOHN T.
Direct method of moment distribution. 593.

HOWLAND, W. E.
Open channels of adverse slope. 662.

HOYT, LAURENCE BRACKETT.
Memoir of. 1573.

HUANG, W. H.
Direct method of moment distribution. 575.

HUNSAKER, J. C.
Steel and light-weight alloys. 1410.

HURLBUTT, ROBERT H.
Panel deflection method. 208.

HURST, H. E.
Sluice-gate discharge. 555.

HUSSEY, H. D.
Steel and light-weight alloys. 1466.

HUTCHINS, WELLS A.
Control of underground water. 819.

INCH, PHILIP L.
"Simplified Method of Determining True Bearings of a Line." 970.

INGALLS, E. C.
Analysis of Vierendeel trusses. 925.

JACKSON, EDWARD SHERMAN.
Memoir of. 1575.

JACOBS, JOSEPH.
Control of underground water. 785.

JACOBSEN, L. S.
Earth shock distortions in structures. 858.

JAMIESON, JOHN QUENTIN.
Memoir of. 1576.

JARVIS, C. S.
True bearings of a line. 1009.

JEFFRIES, ZAY.
"Structural Application of Steel and Light-Weight Alloys: A Symposium: Light-Weight Structural Alloys." 1267.

JOHNSON, FRANK M.
True bearings of a line. 988.

JOHNSON, JOE W.
Mechanics of fluid turbulence. 512.

JOHNSON, R. C.
Stable channels in erodible material. 143.

JOHNTZ, ALBERT FREDERICK.
Memoir of. 1580.

JONES, JONATHAN.
"Structural Application of Steel and Light-Weight Alloys: A Symposium: Foreword." 1181.

JORDAN, LEONARD C.
True bearings of a line. 995.

JOWERS, GILES MATTHEW.
Memoir of. 1689.

KARPOV, A. V.
Steel and light-weight alloys. 1472.
"Structural Application of Steel and Light-Weight Alloys: A Symposium: Modern Stress Theories." 1184.

KELL, RALPH LONG.
Memoir of. 1690.

KELLEY, WILLIAM DATUS.
Memoir of. 1582.

KERSHAW, GEORGE BERTRAM DE BETHAM.
Memoir of. 1584.

KETCHUM, MILO SMITH.
Memoir of. 1487.

KIPP, BURDETT.
Memoir of. 1585.

KIRBY, RICHARD S.
The modern express highway. 1118.

KISSAM, PHILIP.
True bearings of a line. 978.

KLEINBECK, AUGUST GUSTAVE.
Memoir of. 1587.

KLEMIN, ALEXANDER.
Steel and light-weight alloys. 1459.

KNAPP, GEORGE S.
Control of underground water. 830.

KNERR, HORACE C.
Steel and light-weight alloys. 1412.

KOVEDIAEFF, B.
Tension and bending in concrete members. 405.

KRYNINE, D. P.
Lateral pile-loading tests. 278.

LACEY, GERALD.
Stable channels in erodible material. 159.

LANE, E. W.
Diversion on the Mississippi and Atchafalaya Rivers. 109.
"Stable Channels in Erodible Material." 123.

LANG, P. G., JR.
Steel and light-weight alloys. 1423.

LARGE, GEORGE E.
Tall building frames studied by models. 452.

LARSEN, WILLIAM A.
Tension and bending in concrete members. 398.

LARSSON, CARL GUSTAF EMIL.
Memoir of. 1588.

LAVIS, FRED.
The modern express highway. 1079.

LEE, EDWARD HERVEY.
Memoir of. 1590.

LEEPER, JOHN BIGGER.
Memoir of. 1692.

LEGENS, L.
Tapered structural members. 59.

LEHMAN, WERNER.
Steel and light-weight alloys. 1439.

LENTH, GEORGE CASPER DOERING.
Memoir of. 1592.

LENZ, ARNO T.
Open channels of adverse slope. 664.

LESLEY, ROBERT WHITMAN.
Memoir of. 1711.

LEWIS, HAROLD M.
The modern express highway. 1119.

LI, W. P.
Direct method of moment distribution. 596.

LIN, T. Y.
"A Direct Method of Moment Distribution." 561.

LINDLEY, E. S.
Stable channels in erodible material. 144.

LIVESAY, P. CRAIG.
Balancing angle changes. 1060.

LLEWELLYN, F. T.
"Structural Application of Steel and Light-Weight Alloys: A Symposium: Low-Alloy Structural Steels." 1240.

LUCE, WILLIAM F.
Balancing angle changes. 1044.

MacALPINE, D. M.
Steel and light-weight alloys. 1415.

MacCALLA, CLIFFORD SHERRON.
Memoir of. 1593.

MACINTYRE, ROBERT WENTWORTH.
Memoir of. 1600.

McCAUSLAND, CHARLES PATTERSON.
Memoir of. 1602.

McKENNEY, CHARLES ALBERT.
Memoir of. 1603.

McKIBBIN, FRANK PAPE.
Memoir of. 1607.

McLOUGHLIN, FREDERIC OZANAM XAVIER.
Memoir of. 1609.

McREE, F. L.
The modern express highway. 1106.
True bearings of a line. 992.

MADSEN, INGVALD E.
Behavior of stationary wire ropes. 644.

MANEY, G. A.
Balancing angle changes. 1040.

MATZKE, ARTHUR E.
"Varied Flow in Open Channels of Adverse Slope." 651.

MAUGH, L. C.
Analysis of Vierendeel trusses. 919.
Tall building frames studied by models. 434.

MAVIS, F. T.
Open channels of adverse slope. 669.

MEAD, ELWOOD.
Memoir of. 1611.

MEALS, C. D.
Behavior of stationary wire ropes. 638.

MEEM, J. C.
Lateral pile-loading tests. 264.

MENSCH, L. J.
Analysis of Vierendeel trusses. 897.
Balancing angle changes. 1050.
Tall building frames studied by models. 438.

MERRILL, ROBERT H.

True bearings of a line. 1005.

MEURSINGE, JOHN H.

Steel and light-weight alloys. 1421.

MILLER, BENJAMIN.

Mechanics of fluid turbulence. 509.

MIRABELLI, E.

Panel deflection method. 204.
Steel and light-weight alloys. 1397.

MITCHELL, ADOLPHUS.

Successive elimination of unknowns. 358.

MOISSEIFF, LEON S.

"Structural Application of Steel and Light-Weight Alloys: A Symposium: Evolution of High-Strength Steels Used in Structural Engineering." 1333.

MOLITOR, DAVID A.

Panel deflection method. 214.

MORRIS, M. J. R.

"Structural Application of Steel and Light-Weight Alloys: A Symposium: Stainless, High-Alloy Structural Steels." 1257.

MORRISON, GILBERT.

Tall building frames studied by models. 444.

MOSELEY, HARRY H.

Sedimentation in quiescent and turbulent basins. 316.

MOYER, R. A.

The modern express highway. 1141.

NAGEL, C. F., JR.

"Structural Application of Steel and Light-Weight Alloys: A Symposium: Light-Weight Structural Alloys." 1267.

NEFF, FRANK HOWARD.

Memoir of. 1619.

NETTLETON, EDWARD SHERMAN.

Memoir of. 1620.

NIEDERHOFF, AUGUST E.

Lateral pile-loading tests. 267.

NOBLE, CHARLES M.
"The Modern Express Highway." 1068.

NOE, T. P., JR.
Panel deflection method. 211.

NORTON, JAMES WILLIAM.
Memoir of. 1693.

OAKLEY, GEORGE ISRAEL.
Memoir of. 1623.

O'CONNELL, GEORGE PAUL.
Memoir of. 1694.

ODOM, LEO M.
Diversion on the Mississippi and Atchafalaya Rivers. 104.

ODONI, VINCENT PHILLIP.
Memoir of. 1626.

OESTERBLOM, I.
Direct method of moment distribution. 595.

PARET, MILNOR PECK.
Memoir of. 1628.

PARKER, JAMES EDWIN.
Memoir of. 1630.

PARMLEY, WALTER CAMP.
Memoir of. 1632.

PATTISON, HUGH.
Memoir of. 1635.

PAULET, E. G.
Tapered structural members. 26.

PEARSON, RODERIC.
Memoir of. 1695.

PECK, RALPH B.
Analysis of Vierendeel trusses. 925.

PENN, JOHN C.
True bearings of a line. 1003.

PETTIS, C. R.

Stable channels in erodible material. 149.

PICKWORTH, JOHN W.

"Tapered Structural Members: An Analytical Treatment." 1.

PINNEY, J. C.

True bearings of a line. 996.

PLUMMER, FRED L.

Steel and light-weight alloys. 1416.
Tapered structural members. 23.

POPOFF, EGOR P.

Direct method of moment distribution. 578.

PORTER, DWIGHT.

Memoir of. 1639.

POSEY, CHESLEY J.

Mechanics of fluid turbulence. 506.

POST, ANDREW JACKSON, 2D.

Memoir of. 1641.

POWELL, RALPH W.

Mechanics of fluid turbulence. 511.

PURCELL, C. H.

The modern express highway. 1089.

RAGSDALE, E. J. W.

"Structural Application of Steel and Light-Weight Alloys: A Symposium: The Application of Stainless Steel in Light-Weight Construction." 1360.

RATHBUN, J. CHARLES.

Steel and light-weight alloys. 1415.
Tapered structural members. 33.

REARDON, JOHN MELVIN.

Memoir of. 1696.

REESE, MARSHALL HUDSON.

Memoir of. 1706.

REEVES, AUSTIN H.

Direct method of moment distribution. 589.
Tapered structural members. 55.

REEVES, WILLIAM FULLERTON.
Memoir of. 1644.

RIPLEY, THERON M.
The modern express highway. 1110.

ROSS, DOUGLAS WILLIAM.
Memoir of. 1646.

ROUSE, HUNTER.
"Modern Conceptions of the Mechanics of Fluid Turbulence." 463.
Open channels of adverse slope. 671.

RUDOLPH, WILLIAM E.
The modern express highway. 1128.

RUGE, ARTHUR C.
Earth shock distortions in structures. 851.
Steel and light-weight alloys. 1457.

RUSH, DONALD BENJAMIN.
Memoir of. 1651.

SALISBURY, E. F.
"Influence of Diversion on the Mississippi and Atchafalaya Rivers." 75.

SALTER, G. S.
Direct method of moment distribution. 582.

SAVAGE, R. E.
Control of underground water. 789.

SCHALL, FREDERICK EDWARD.
Memoir of. 1652.

SCHROEPFER, GEORGE J.
Sedimentation in quiescent and turbulent basins. 317.

SCHRONTZ, CHALMERS C.
True bearings of a line. 983.

SCHUREMAN, LESLIE R.
The modern express highway. 1088.

SCHWALBE, W. L.
"Simultaneous Equations in Mechanics Solved by Iteration." 939.

SCHWARTZ, CLARENCE HORACE.
Memoir of. 1697.

SHELLENBERGER, LEIDY RUDY.
Memoir of. 1653.

SHOEMAKER, LOUIS H.
"Truss Deflections: The Panel Deflection Method." 195.

SIKES, ZENAS HARRISON.
Memoir of. 1655.

SIMPSON, WILLIAM M.
Balancing angle changes. 1060.

SINGSTAD, OLE.
Quabbin Dams and Aqueduct. 739.

SISCO, F. T.
Steel and light-weight alloys. 1413.

SLADE, J. J., JR.
"Sedimentation in Quiescent and Turbulent Basins." 289.

SMITH, G. E. P.
Control of underground water. 795.

SNOW, BAYARD F.
Quabbin Dams and Aqueduct. 737.

SNOW, F. C.
Tension and bending in concrete members. 387.

SOLAKIAN, ARSHAG G.
Steel and light-weight alloys. 1462.

SPITZER, FELIX H.
Direct method of moment distribution. 576.

STARKWEATHER, WALTER H.
True bearings of a line. 991.

STEVENS, J. C.
Open channels of adverse slope. 666.
Stable channels in erodible material. 145.

STEVENSON, JAMES CUMMIN.
Memoir of. 1656.

STEWART, DOUGLAS M.
"Behavior of Stationary Wire Ropes in Tension and Bending." 606.

STEWART, R. W.

Successive elimination of unknowns. 355.

STIMSON, EARL.

Memoir of. 1657.

STROBEL, CHARLES LOUIS.

Memoir of. 1491.

STURM, R. G.

Steel and light weight alloys. 1442.

SUDLER, CHARLES EUGENE.

Memoir of. 1660.

SWICK, C. H.

True bearings of a line. 977.

TAYLOR, EDWARD RALPH.

Memoir of. 1699.

TCHIKOFF, V. V.

Stable channels in erodible material. 164.

TEMPLIN, R. L.

"Structural Application of Steel and Light-Weight Alloys: A Symposium: Tests of Engineering Structures and Their Models." 1211.

THOMPSON, DAVID G.

Control of underground water. 798.

THOMSON, T. KENNARD.

Lateral pile-loading tests. 265.

TIMBY, ELMER K.

Steel and light-weight alloys. 1427.

TSAI, FANG-YIN.

Panel deflection method. 217.
Successive elimination of unknowns. 360.
Tall building frames studied by models. 447.
Tapered structural members. 41.
Wind stresses in reinforced concrete arch bridges. 339.

TURNEAURE, F. E.

Tension and bending in concrete members. 397.

TWINING, WILLIAM STANTON.

Memoir of. 1662.

UBBINK, WILLIAM JOHN.
Memoir of. 1700.

van REENEN, REENEN JACOB.
Memoir of. 1702.

VAUGHN, R. L.
True bearings of a line. 998.

von BERGEN, H. E.
Open channels of adverse slope. 661.

von KARMAN, THEODOR.
Mechanics of fluid turbulence. 522.

VOSE, R. W.
Steel and light-weight alloys. 1403.

WARNER, W. L.
Steel and light-weight alloys. 1426.

WARRINGTON, H. E.
Tension and bending in concrete members. 397.

WEISKOPF, WALTER H.
"Tapered Structural Members: An Analytical Treatment." 1.

WESSMAN, HAROLD E.
Analysis of Vierendeel trusses. 926.
Direct method of moment distribution. 577.

WEST, RAY BENEDICT.
Memoir of. 1664.

WHEELER, ARTHUR CHAMBERS.
Memoir of. 1667.

WHITE, LAZARUS.
Lateral pile-loading tests. 271.

WHITE, MERIT P.
Earth shock distortions in structures. 857.
Open channels of adverse slope. 671.

WHITMORE, GEORGE D.
True bearings of a line. 980.

WHITNEY, FRANK ORMOND.
Memoir of. 1667.

WILBUR, JOHN B.

"Successive Elimination of Unknowns in the Slope Deflection Method." 346.

WILBUR, WILLIAM E.

Tension and bending in concrete members. 385.

WILEY, T. T.

The modern express highway. 1103.

WILKIN, CROSBY J.

True bearings of a line. 1007.

WILLIAMS, HARRY A.

"Dynamic Distortions in Structures Subjected to Sudden Earth Shock." 838.

WILLOUGHBY, J. E.

Control of underground water. 785.

WILLSON, C. A.

Successive elimination of unknowns. 352.

WILSON, JOHN JUNIOR.

Memoir of. 1704.

WILSON, WARREN E.

Mechanics of fluid turbulence. 521.

WINSOR, FRANK E.

"Surface and Sub-Surface Investigations, Quabbin Dams and Aqueduct: Foreword." 680.

WINSTON, A. W.

"Structural Application of Steel and Light-Weight Alloys: A Symposium: Magnesium Alloys and Their Structural Application." 1385.

WITMER, FRANCIS P.

"Tall Building Frames Studied by Means of Mechanical Models." 416.

WITT, CHARLES VICTOR.

Memoir of. 1669.

WOLFF, HANS HERMANN.

Memoir of. 1670.

WOOD, R. T.

"Structural Application of Steel and Light-Weight Alloys: A Symposium: Light-Weight Structural Alloys." 1267.

WYLIE, PAUL E.

True bearings of a line. 976.

WYLY, L. T.

Successive elimination of unknowns. 366.

YASINES, S. FRANZ.

Mechanics of fluid turbulence. 508.

YATES, BRUCE CLINTON.

Memoir of. 1672.

YOUNG, DANA.

"Analysis of Vierendeel Trusses." 869.

ZINN, AARON STANTON.

Memoir of. 1674.